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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/815,389

03/31/2004

Patrick Chiu

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EXAMINER

MOHR, ERIC JOHN

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

05/12/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/815,389	Applicant(s) CHIU ET AL.	
	Examiner Eric J. Mohr	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9 and 11-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9 and 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. Applicants' response to the last office action, filed February 5, 2005 has been entered and made of record.
2. In view of the amended drawing sheets, the objection to figures 15-17 is expressly withdrawn.
3. Applicants' amendment has required new grounds of rejection, presented in this Office Action.
4. Applicants' arguments have been fully considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-9, 11-16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tserng, US 6,570,608 (hereinafter "Tserng") further in view of Porikli, US 2003/0118214 (hereinafter "Porikli") and Divakaran et al., US 6,697,523 (hereinafter "Divakaran", a reference of record).

Regarding claim 19, which is representative of claims 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, and 15, Tserng discloses a method for finding a region of high importance in a video (**column 1, line 38**), the video including a plurality of video frames having pixels

(C2, L1-7), comprising: determining a kinetic energy for each pixel within each video frame, wherein the kinetic energy is determined using pixel luminance values (C5, L36-40: **a frame difference, representing motion or kinetic energy, is calculated on a pixel-by-pixel basis using pixel luminance values**); assigning pixel values to each pixel, wherein each pixel having a higher than average kinetic energy is assigned a value of one and the remaining pixels are assigned a value of zero (C5, L51-59: **the motion values are thresholded to values of one and zero**); constructing groups from pixels having a value of one, wherein the pixels having a value of one are grouped together if they are within one pixel from each other (C5, L6-13: **contiguous blocks of pixels with a value of one are grouped**); and merging pixel groups to generate regions of high importance, wherein each region of high importance is a predetermined shape (C6, L15-22: **a rectangular box is fit around the regions of high importance**). Tserng also discloses linking objects in consecutive frames (C4, L13-14).

Tserng does not explicitly disclose that the video is regarded as a three dimensional volume in x-y-t space, the t-component of the x-y-t space representing a time axis. Tserng also does not explicitly disclose that the merging step groups pixels having a minimum energy density threshold and a minimum volume threshold together to generate regions of high importance, wherein each region of high importance is box-shaped having rectangular sides, each region of high importance having a three dimensional volume in the x-y-t space.

Porikli discloses a method for identifying moving objects in video (**paragraph 0009**) wherein the video is represented in a data structure as being a volume in x-y-t

space (**P0017**). Further, Porikli discloses a binary threshold that depends up on average energy (**P0041-0042**). Porikli also discloses identifying objects using a volume threshold (**P0028: volumes are merged according to a minimum size threshold**) and using an energy density threshold (**P0044: a normalized pixel count within a volume exceeds a threshold**).

It would have been obvious to one having ordinary skill in the art at the time of invention was made to include the described features of Porikli in the method of Tserng to better identify moving objects in a video (**Porikli, P0008**). Further, Tserng and Porikli are analogous art containing several overlapping elements to solve a similar problem.

Tserng does not explicitly disclose segmenting the video into at least one video clip and performing the process on the video clip. Divakaran discloses a system witch partitions a video into shots using standard techniques well known in the art before further processing (**C5, L45-53**).

It would have been obvious to one having ordinary skill in the art at the time of invention was made to include the described features of Divakaran in the method of Tserng thus ensuring that each video clip to be processed does not include a scene change (**C5, L47-49**).

Regarding claim 16, Porikli discloses that calculating the change in luminance comprises calculating the change in luminance between video frames in the t-component of the x-y-t space (**P0031: distances are the change in value between adjacent frames**).

7. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tserng, Porikli, and Divakaran as applied to claims 1 and 15 above, and further in view of Xu, US 2003/0108238 (hereinafter "Xu").

Regarding claim 17, Tserng discloses that calculating the change in luminance using a background image. Tserng does not explicitly disclose calculating the change in luminance for each pixel using all said x-y-t components of the x-y-t space. Xu discloses a background being created from the pixels of all frames of a video shot **(P0038-0039)**.

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Tserng, and calculate the background image as taught by Xu, therefore using all pixels in a shot calculate motion vectors and create a motion detection method that is robust against as discussed by Xu **(P0040)**.

Regarding claim 18, Xu discloses compensating each frame of a video for motion of the camera **(P0034)**; therefore using these compensated frames to calculate kinetic energy will yield a residual motion velocity.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric J. Mohr whose telephone number is (571)270-5140. The examiner can normally be reached on 7:30am-5pm M-Th, 7:30am-4pm Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric J Mohr/
Examiner, Art Unit 2624

/Jingge Wu/
Supervisory Patent Examiner, Art Unit 2624